FINAL

SITE INVESTIGATION REPORT
Former North Pacific Division Laboratory Troutdale, Oregon

Prepared for

U.S. Army Corps of Engineers
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EXECUTIVE SUMMARY

INTRODUCTION AND SITE INFORMATION

URS Corporation (URS), on behalf of the Seattle District of the U.S. Army Corps of Engineers (USACE), conducted a site investigation (SI) at the former USACE North Pacific Division (NPD) laboratory, located in Troutdale, Oregon.

In its present configuration, the site consists of a northern parcel and a southern parcel of land divided by Northwest Graham Road. The area is primarily industrial and is zoned for general manufacturing. Existing structures on the southern parcel consist of a 65,000-square-foot building that formerly housed the USACE NPD materials testing laboratory and a warehouse. There are two small buildings to the east of the main building. These buildings were used for storage of hazardous materials and oil drums. A small fenced enclosure with a concrete pad adjacent to the east side of the building is reported to have been used to enclose an electrical transformer; six pole-mounted transformers are placed directly above it. Two large mobile trailers north of the main building are currently used by Mount Hood Community College.

The southern parcel is bordered to the north and east by Northwest Graham Road and to the south by Troutdale Airport. A warehouse is located on the adjacent property to the west of the site and is occupied by the U.S. Forest Service. Land to the east is occupied by a construction company and other commercial properties.

The northern parcel is undeveloped and occupied by a landfill that covers approximately one-third of an acre. It is bordered to the north and west by undeveloped land owned by the Reynolds Metals Company (RMC), to the south by Northwest Graham Road, and to the east by the new City of Troutdale wastewater treatment plant.

The NPD laboratory operated at the site from 1949 until the spring of 1997. The laboratory conducted materials testing for the entire duration of operation. In 1986, the laboratory expanded operations within the warehouse facility and began analyzing quality assurance (QA) split samples collected during Hazardous, Toxic, and Radioactive Waste (HTRW) investigations conducted by the USACE and its contractors. Environmental samples were analyzed until the cessation of operations in 1997.

The main building has several sink and floor drains that lead to a common drain header outside the building and then to a concrete sump on the east side of the building. All drains, except for those from the lavatories and the freeze/thaw room, discharged to this sump. The lavatory drains discharged directly to the sanitary sewer, and the freeze/thaw drains discharged directly to the drainage ditch. The sump discharged into the drainage ditch, which runs along the eastern margin of the site. In 1996, the effluent from the sump and lavatories was connected to the local

sewer system. In addition, two concrete raceways served as floor drains within the building and discharged directly into the drainage ditch until they were blocked in 1996.

A dry well existed in the southeast portion of the site from 1950 until 1999, when it was removed and the surrounding soil was excavated and removed. The dry well was used for waste disposal from 1950 until 1981.

A 10,000-gallon storage tank located west of the main building was decommissioned and removed in 1993. The tank was partially underground in a concrete vault. It was used to store oil for the boiler-fired heating system in the building.

Material sampled from the Umatilla Army Depot Borrow Site in 1994 remained at the site after the laboratory closed. The material consisted of sand and gravel contained in 33 five-gallon plastic buckets.

OBJECTIVES

The objectives of this SI were to evaluate whether contaminated soil remains at locations where soil removal activities were conducted previously; to assess whether past laboratory activities, including the use of the landfill, have adversely impacted soil or groundwater quality beneath the former NPD laboratory site; and to evaluate if contamination that may pose a threat to human health or the environment currently exists at the site. This SI was designed to address outstanding issues identified at the site by the U.S. Environmental Protection Agency (EPA) and State of Oregon Department of Environmental Quality (ODEQ).

This SI was completed to fill data gaps remaining after previous investigations at the site. Soil, sediment, groundwater, and concrete samples were collected during this SI for the following purposes:

- To collect the data needed to define better the type and extent of groundwater, soil, sediment, and concrete contamination
- To assess whether previous removal of contaminated soil was complete
- To detect whether the pole-mounted transformers have adversely impacted the soil around the existing transformer pad
- To evaluate potential adverse impacts to the environment from past laboratory activities

- To assess the concentration of potential contaminants in the Umatilla Army Depot Borrow Site material stored at the site

INVESTIGATION ACTIVITIES

To fulfill the objectives of this SI, the following field activities were conducted between September 2001 and April 2003.

Soil and Concrete

Background. Five soil samples were collected from three locations using Geoprobe® to obtain background values. The samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), metals (plus strontium and uranium), and cyanide.

Drainage Ditch. Eleven soil samples were collected from six locations in the drainage ditch using Geoprobe® and hand tools. The samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals (plus strontium and uranium), and cyanide.

Dry Well Area. Fourteen soil samples (including duplicates) were collected from seven locations in the dry well area using Geoprobe®. The samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals (plus strontium and uranium), and cyanide.

Cleanout Pipe. Three samples were collected near the building cleanout pipe using Geoprobe® and were analyzed for VOCs, SVOCs, pesticides, PCBs, metals (plus strontium and uranium), and cyanide.

Transformer Pad. Four surface soil samples and one duplicate were collected near the transformer pad using hand tools and were analyzed for PCBs only.

Fuel Oil Tank Vault. One soil sample and duplicate were collected from the fuel oil tank vault using Geoprobe® and were analyzed for VOCs, SVOCs, and diesel-range and heavy-oil-range petroleum hydrocarbons.

Landfill North Toe. Four surface soil samples and one duplicate were collected along the north toe of the landfill using hand tools. The samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals (plus strontium and uranium), and cyanide.

Landfill Trenches. Twelve soil samples (including duplicates) were collected from five exploratory trenches and analyzed for VOCs, SVOCs, pesticides, PCBs, metals (plus strontium

and uranium), and cyanide. Specific landfill trench samples also were analyzed for diesel-range and heavy-oil-range petroleum hydrocarbons.

Landfill Concrete. Concrete chips were collected from drums of solidified concrete uncovered in the landfill and were analyzed for VOCs, SVOCs, pesticides, PCBs, metals (plus strontium and uranium), and cyanide.

Umatilla Army Depot Borrow Site Material. Buckets containing soil from the Umatilla Army Depot Borrow Site were stored at the NPD laboratory site. Samples of this soil were collected using hand tools and were analyzed for SVOCs, pesticides, PCBs, metals, explosives, and chemical warfare agent breakdown products.

Concrete Sump Sediment

Sediment was collected from the base of the concrete sump. The sediment sample and duplicate sample were analyzed for the presence of VOCs, SVOCs, pesticides, PCBs, metals (plus strontium and uranium), and cyanide. The samples also were analyzed for diesel-range and heavy-oil-range petroleum hydrocarbons.

Groundwater

One microwell was installed in the drainage ditch, a second microwell was installed in the former dry well soil removal area, and three microwells were installed on the west side of the former laboratory facility. In September 2001, groundwater samples and water level measurements were collected from these five temporary microwells and six existing monitoring wells installed during a previous investigation. The six monitoring wells were sampled again in April 2003. During both events, the samples were analyzed for the presence of VOCs, SVOCs, pesticides, PCBs, total and dissolved metals, and total cyanide.

Product

Product enclosed in glass and plastic containers that were discovered in a landfill trench was sampled for waste characterization purposes. The samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals, cyanide, reactive cyanide, reactive sulfide, pH, and flashpoint.

CONCLUSIONS

Former Excavations

The first objective of this SI was to evaluate whether contaminated soil remains at locations on the former NPD laboratory site where soil removal activities were conducted previously. Concentrations of chemicals detected in soil during this investigation at the former drainage

ditch and dry well excavation locations do not exceed applicable screening values. Elevated concentrations of SVOCs and lesser concentrations of VOCs and diesel-range and heavy-oil-range petroleum hydrocarbons appear to remain in soil directly beneath the former fuel oil tank location. Of these compounds, only benzo(a)pyrene was identified in the human health risk evaluation as a chemical of potential concern (COPC). This compound was detected at concentrations approximately five times the industrial soil Preliminary Remediation Goal (PRG). It is possible that this elevated concentration is related to asphalt fragments present in the sample. Confirmation samples collected during tank removal activities indicated that contamination does not exist in soil surrounding the former tank location; thus the affected soil is limited in extent. Because soil surrounding the former tank vault is expected to remain covered by asphalt pavement, exposure is limited and therefore the soil with benzo(a)pyrene is not expected to pose a potential health risk. Given the fate and transport characteristics of benzo(a)pyrene, as well as the paved ground surface, this chemical is not expected to be mobile in the soil or infiltrate to groundwater. Analytical results of groundwater samples collected in downgradient and crossgradient monitoring wells indicate that groundwater is not impacted by the former tank.

Based on the results of this SI, soil removal activities conducted previously at the dry well, drainage ditch, and fuel oil tank vault effectively removed a sufficient amount of contaminated soil to eliminate risk to human health or the environment. The concentrations detected at former excavation locations are assumed to represent maximum values of the remaining contaminants because the sources have been removed and concentrations will decrease with time through natural attenuation. Further removal actions or assessment are not warranted in these areas.

Past Laboratory Activities

The second objective of this SI was to assess whether other past laboratory activities and the use of the landfill have adversely impacted soil or groundwater quality beneath the site. No contaminants were detected in the background, transformer pad, or building cleanout pipe soil samples at concentrations that exceed the applicable PRGs. Arsenic, benzo(a)pyrene, and 1,2-dibromoethane were detected in landfill soil samples at concentrations that exceed the respective PRGs. Concentrations of arsenic, chromium, and Aroclor® 1242 in the sump sediment sample and arsenic in the representative concrete drum sample also exceed respective screening values. However, drums containing solidified concrete that were encountered in the landfill during this SI, landfill material excavated from trench TR-5, sediment from the concrete sump, and the top 3 inches of topsoil inside and around the fence surrounding the former transformer pad were removed from the site and transported offsite for proper disposal. The remaining landfill waste material and affected soil are scheduled to be removed in the summer of this year.

Concentrations of total and dissolved arsenic and carbon tetrachloride detected in groundwater samples exceed screening levels. However, the exposure pathway for constituents in groundwater is incomplete, and the detection of carbon tetrachloride was isolated to one sample

and only slightly exceeded the screening values. Monitoring wells and microwells were located such that, regardless of the flow direction, contamination impacts sufficient to be of concern would have been detected throughout the groundwater sampling system. Also, based on the size of the site, the number of groundwater sampling points in this investigation was adequate to capture potential contamination that would be of concern.

The results of this SI indicate that past activities at the former laboratory facility have not adversely affected site soil or groundwater quality beyond the areas previously or planned for cleanup. Upon completion of the planned landfill cleanup, remaining concentrations of detected constituents do not pose a human health or ecological risk. Based on analytical results and field observations, additional investigation or data collection with respect to past laboratory activities at the site is not warranted.

Possible Human Health and Ecological Risks

A conceptual site model was developed and a human health risk evaluation and ecological risk assessment were performed to achieve the third objective of this investigation: to evaluate whether contamination that may pose a risk to human health or the environment is present at the site. The conceptual site model incorporated site geologic and hydrogeologic information, analytical results and comparison to screening values, a beneficial water use determination and a future land use assessment, chemical fate and transport properties, and site conditions. An ecological risk assessment (ERA) and a human health risk evaluation were performed using standard Oregon Department of Environmental Quality (ODEQ) and U.S. Environmental Protection Agency (EPA) methodology. The human health risk evaluation assumed that the landfill will be removed as planned.

The results of an ODEQ Level I (scoping) ERA concluded that neither soil nor groundwater at the site would be a source of contaminant exposure to ecological habitats or species; therefore, Level II (screening) ERA is not warranted.

Based on results from a human health risk evaluation, five COPCs in soil were identified: Aroclor® 1254, arsenic, benzo(a)pyrene, benzo(a)anthracene, and benzo(b)fluoranthene. The evaluation concluded that site-specific screening levels are not warranted and that the EPA Region 9 industrial soil PRGs are sufficiently protective of site exposures for the five COPCs in soil. Concentrations for only two of the five compounds (benzo[a]pyrene and arsenic) in landfill soil and one compound (benzo[a]pyrene) in the fuel oil tank vault soil exceed the PRGs. The remaining landfill waste material is scheduled to be removed in the summer of this year, thereby eliminating potential associated human health or ecological risks. Based on the intended future land use of the site, the depth of soil containing benzo(a)pyrene, and pavement on the ground surface, soil surrounding the former tank removal excavation does not pose a potential risk to

human health or the environment. Furthermore, benzo(a)pyrene is not expected to be present in or migrate to groundwater at concentrations that would exceed groundwater screening values.

The conceptual site model clearly indicates that after landfill removal actions are complete, the limited amount of contamination that will remain on site will not pose a risk to human health or the environment. With the planned removal of the landfill material, no data gaps are identified at this time. The site has been adequately characterized, and the level of data evaluation conducted and the results obtained during this site investigation are sufficient to support a 'No Further Action' determination. Therefore, further characterization of this site is not warranted.